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ABSTRACT

This paper discusses the role of the intermediary in the information profession. Changes due to the advent of digital media are addressed, and ways that a positive role for the intermediary can be promoted are suggested. Several activities are listed to illustrate the expanding role of the intermediary, and actions in order to secure a future for intermediaries are proposed. Three examples of information intermediation are described--the information architect, the knowledge manager, and the facilitator. The application of information management and intermediation skills in the academic environment is then addressed. The following ways that academic library staff support information provision and use are listed: collection/resource management and development; resource discovery; metadata management; training staff, students, and other learners to find, use, and manage information; rights negotiation; and learning support. Other areas that may see increasing prominence are also identified, including project management, user behavior identification, and digital reference service. (Contains 20 references.) (MES)

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Self Service: What is the Function of the New Intermediary?

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Proceedings

Self service: what is the function of the new intermediary?

Michael Middleton

Introduction

In the business world it's called eliminating the middleman. The advent of electronic commerce, led to cries of we can do it!- disintermediate so that customers may deal directly with suppliers.

However, just as often as there is rejoicing that we are able to buy direct, services jump up that add value to our purchasing by inserting expertise about the product. Typically, these products are *physical* entities such as motor vehicles or wine. Perhaps they justify someone testing them for us, particularly when we can trust such an intermediary's expertise and experience more than our own. Is it a different matter when the entities are *digital*: music, a travel reservation or a financial transaction? It is the elimination of brokers for commodities such as these, which has caused people in the world of e-commerce to talk in terms of compressing the supply chain.

If businesses can make more information available on a self-service basis, with users having access to current news, intelligence and data, they can react faster to potential problems and capitalize on market opportunities. This may go hand-in-hand with reducing the volume of printed reports (or at least, those paid for by the businesses). To quote Philip Russom, a business intelligence service director "CIOs are looking for these types of self-service and zero-support applications - . Overburdened IT departments are reluctant to deal with the training and support issues when [heavy-duty] business intelligence tools are placed into the hands of hundreds and thousands of nontechnical users." (Ruber, 1999)

In e-commerce however, there has been a reaction to the self-service approach. Investigators have noted that just in physical markets, intermediaries aggregate buyer demand, act as agents of trust by preventing opportunistic behaviour, facilitate market by reducing operating costs, and match buyers and sellers. These same functions are valued in e-commerce. (Bailey & Bakos, 1997)

A recurring pattern of intermediation, disintermediation, and reintermediation has been identified in e-commerce (Wigand, 1997). Analysts such as Chircu & Kauffman (2000) have found that traditional firms (in this case in the travel industry), have access to a range of strategies that enable them to avoid disintermediation and retain highly profitable central roles in the marketplace in the long run.

Intermediation and the information professions

A good profession should try to make itself redundant, by empowering people to help themselves.

However, with the advent of digital media, information professionals have periodically felt threatened by disintermediation. This arose as an issue some time ago when the command-driven interface began to be more user-friendly (user-friendliness is a term that I haven't heard used as much lately as in the past!). Of course the intermediary long predated the digital database, and qua librarian or archivist, provided the essential access to the collection - either via direct personal assistance, or more subtly by creation of the finding aids. Although librarians grasped the initiative with early information retrieval systems and provided the service, many carried out information retrieval as one duty among many other duties.

There have regularly been reactions to technological advances and those in the industry at least,

have found justification for continuing intermediary roles. For example the problems of end user searching have been outlined by Griffiths (1997) who pointed to the influx of online availability to users during the 1990s leading to many of them being disillusioned by information overload.

As a consequence a positive role for the intermediary may be promoted though:

- Saving managers time by negotiating the technology and being aware of its shortcomings
- Improving the managers' satisfaction by shielding them from the stress of what is variously called *data smog* and *infoglut*
- Establishing corporate knowledge centres to help manage the problem
- Identifying specific information requirements per medium of the reference interview - thus avoiding the generic problems of so-called push technology
- Organising of information so that it is structured specifically of the requirements of the enterprise
- Going beyond the limitations of search engines with their limited retrieval functionality and coverage.

If information is the commodity we are seeking, should we find it ourselves, or employ intermediaries (bearing in mind that finding it ourselves is often made possible by the metadata provided by intermediaries)?

The person who looks up an author in a catalogue and finds a reference to the item on a shelf is using an intermediary who has increased the value, decreased the noise by standardising forms of author/title entry. The Web is yet to achieve this, but it is the intermediaries who are tackling the issue by providing metadata.

Online systems may remove the obstacle of access to the systems that provide information, but they don't remove the barriers to the relevant information that is required. Most users of search engines use single term searches, and do so without an appreciation of the range of contexts in which the terms may appear. The issue is not about whether it is possible to retrieve information, but whether you can retrieve a manageable pertinent amount. Therefore the concepts of precision and recall continue to have importance and require professional application.

This is not to say that intermediaries must concern themselves only with searches involving complex cognitive interrelationships. Even a simple, clearly expressed request may lead to complex retrieval requirements - take for example, the 'quick' search for annual reports of the Department of Communications (or any number of bodies that are constantly changing their names if not jurisdictions), or the 'quick' search for a patent on lipstick).

Empowering the individual happens only via education, itself provided by information intermediaries. The education must be undertaken at a number of stages from school for general information literacy concepts, through to tertiary education where the information literacy is more contextual and introduces students to the documentation of their discipline, as it relates to their assignments. However, even the information literate (perhaps, especially the information literate!) will in the work place save time and money by employing a specialist who can do the job faster and more effectively.

Information regularly needs to be repackaged so that it may be better suited to the cognitive framework of the recipient. The tools and techniques available for repackaging are normally the province of an intermediary.

Many writers have defended the role of the librarian as information intermediary in a digital environment while qualifying their support with statements about the need to embrace the technological support mechanisms, and promote their information skills in corporate settings (Abbott, 1998; Bale, 2000; Zipperer, 1998).

Some investigators have noted that the availability of intelligent agents, data warehouses, digital

libraries, corporate intranets, groupware, and the like, may be taken as opportunities to advance library skills beyond traditional boundaries. Fourie (1999) sees it as either a threat or a challenge depending on how the issue is viewed, and itemises activities such as the following to explicate the expanding role of the intermediary:

- Negotiating with database vendors and other organisations that provide access to information. This is done according to the needs of end-users - the negotiations can include the quality of services provided as well as the user interfaces
- Organising subject access to unstructured information sources (e.g. resource guides and directories of Internet resources)
- Designing intranets for organisations
- Providing training and support services for endusers - the need for the continuing education of end-users (e.g. in new developments) is stressed in particular. Information skills should also be taught as part of research processes
- Getting actively involved in practical research on information retrieval and related services
- Monitoring the quality of databases and other information sources
- Working with other role players (such as publishers and information providers) to improve the quality of, and access to, information.

Fourie also considers management of an information service as a whole, and proposes the following actions in order to secure a future for intermediaries:

- Monitor and possibly influence the organisational culture with regard to expectations of information specialists as well as other employees of the organisation (e.g. encouraging employees to do all their own information searches)
- Create a working environment which stimulates awareness of new developments in the online industry, database products and techniques for information retrieval (e.g. do information specialists have access to the latest information in the field of online searching and the services they have to provide?)
- Promote a learning organisation (i.e. an organisation that facilitates learning for all its members (including end-users) and continually transforms itself)
- Initiate and promote practical research projects, including publications on research results (to improve the services provided, the skills of information specialists, as well as the image of information specialists)
- Actively market services and products
- Negotiate partnerships with other role players (e.g. computer services, publishers, faculty if it is an academic information service)
- Promote co-ordination between research results (including academic research) and practical implementation
- Provide opportunities for continuing education, for example through networks.

There are clearly many opportunities in many contexts for information intermediaries. I now consider specific workplace examples.

Case studies in information intermediation

The role and importance of the intermediary has been made evident by descriptions of a number of roles in which the bringing together of people and information sources is recognised as a sophisticated and important responsibility.

Three examples of such information intermediation are the information architect, the knowledge manager, and the facilitator.

Information architect

The information architecture movement, has probably been given most impetus by the Rosenfeld & Morville book (1998), in which they address various questions with respect to Web site design. These questions such as "what do we do that improves understanding in others?", and "How can we help people make connections, construct meaning, and respond in ways that increases their possibilities?", are the same type of questions that an editor (another intermediary whose role is converging with other information professionals), may ask with respect to print format material.

They see the role of an information architect as:

- Clarifying the mission and vision for a site, so that the needs of it sponsoring organisation are balanced with the needs of its users
- Determining the content and functionality of a site
- Specifying how users will find information in the site by defining its organisation, navigation, labeling and searching systems
- Mapping out how the site will accommodate change and growth over time.

This is something more than concern with visual design aspects for human-computer interaction. It assumes information management and project management roles that include:

- User-orientation in working towards the form and function of a site and the navigational metaphors that are used within it
- Attention to the interactivity aspects of a site so that it may for example be readily updated by interface with databases
- Creation of *metadata* that describes the site and makes it more amenable to location by specialised search engines
- Creation according to *evaluation standards* that exist for the structure and organisation of a site.

Below is an example of a recent advertisement for an information architect seeking a creative individual to carry out a number of responsibilities.

> CLIENT RESEARCH
> * Learning more about our clients' organisations, their goals, their users, and their content.
>
> PRODUCT RESEARCH
> * Exploring technologies that complement the abilities of humans to add value to information.
>
> INFORMATION ARCHITECTURE DESIGN
> * Creating usable organisation and navigation systems. Developing controlled vocabularies and thesauri.
>
> CLIENT MANAGEMENT
> * Presenting ideas, leading discussions, and generally collaborating with our clients to produce innovative solutions.
>
> TRAINING
> * Facilitating knowledge transfer, so that our clients can design and manage their own information systems.

The position description (Argus Associates, 2000) expects that a successful applicant should:

- Understand the principles of information organisation and user interface design
- Have an advanced degree in library and information science or human-computer interaction, experience designing and developing information systems
- Have excellent communication, organisation, and management skills and should be comfortable maintaining relationships with clients and colleagues
- Have experience as a team member on information system development projects is desired.

Knowledge manager

Despite the lack of delineation between data, information and knowledge (and the improbability of managing knowledge), we are increasingly seeing use of the term knowledge management in business. There are multiple definitions reported (Beckman, 1999), for example:

- Systematic, explicit and deliberate building, renewal and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets (Wiig)
- Capturing a company's collective expertise wherever it resides - in databases, on paper, or in people's heads - and distributing it to where it can produce the biggest payoff (Hibbard)
- Right knowledge to the right people at the right time so that they can make the best decision (Petrash)

The definitions normally do not trouble to make a distinction between management at operational, analytical and strategic levels. At the operational level knowledge managers are required to collect and organise internal and external information. At the analytical level, the role is more about determining user information needs and system requirements. At the strategic level, enterprise planning issues are the main concern.

Assuming that knowledge retained by people is tacit, and that when made explicit it is documented as information (and therefore becomes manageable), then the performance of this role is one of information intermediation. Knowledge management tasks typically encompass:

- Repository building and maintenance, that bring together the knowledge in people's heads, with what is documented in digital or paper form
- Articulated models of knowledge flow and communication in order to obtain shared outlooks, so that there is an acknowledged continuity between knowledge in people's heads and what is recorded, and a mechanism for accomplishing this
- Metainformation maintenance to ensure that knowledge description is carried out according to rules, controls and vocabularies to assist with retrieval
- Information retrieval per medium of software that supports principles of recall and precision refinement, and the ability to provide ranked and easily restructured reports
- Identification, evaluation and use of appropriate information sources such as market surveys or aggregated transaction reports that is gathered to make decisions
- Indicators of performance, such as counts of knowledge sources, comparisons of database scope, or numbers of information retrieval transactions, as input measures, or outcomes such as income from innovation or by consultancy, or by publishing as in academic institutions
- Training of employees about information resources and role in information transfer.

Facilitator

The term facilitator is used in the domain of groupware, and analytical work has been done on defining the facilitation role (Clawson & Bostrom, 1993) leading to identification of the following 16 responsibilities:

- Promotes ownership and encourages group responsibility

- Demonstrate self-awareness and self-expression
- Appropriate selects and prepares technology **
- Listens to, clarifies, and integrates information **
- Develops and asks the "right" questions **
- Keeps group focused on outcome/task
- Creates comfort with and promotes understanding of technology & technology outputs
- Creates and reinforces and open, positive and participative environment
- Actively builds rapport and relationship
- Presents information to group
- Demonstrates flexibility
- Plans and designs the meeting process
- Manages conflict and negative emotions constructively
- Understands technology and its capabilities
- Encourages/support multiple perspectives **
- Direct and manages the meetings **

A comparison has been made between these roles and the roles of librarians as intermediaries (Schreiber & Moring, 1997). They took a set of defined information intermediary functions (Ingerwsen, 1992) to be:

- Dialogue function(s) - directed towards user and IR systems in order to learn about these components
- Domain knowledge or model function - to understand information need and problem space underlying the request
- Request modeling function - to translate request to query
- Systems model building functions - to understand the features of the IR systems
- Systems selection function - to choose an adequate IR system
- Matching function - to search the IR system with an IR technique
- System feedback function - to obtain conceptual feedback from IR systems to support the user
- Rule function - to control and guide other functions procedures

They found that those bullet items marked ** in the first list were considered to be in common, based upon their analysis of facilitation of an online conference. However, we see from looking at this first list that most of the roles are ones that we would typically expect from an information intermediary involved in project management.

The three cases discussed above exemplify that information management skills, may be applied in a variety of contexts, ali involving intermediation. Similar application is also apparent in the academic environment.

Academic environment

Teaching and learning in higher education in recent years has been characterised by a great deal of support for online content delivery. At first glance, this may suggest that that library support for learning is diminished or eliminated by the availability of online resources.

This is to misunderstand the place of the library. It continues to have a wide range of significant responsibilities. These have been articulated in a variety of contexts, for example by SCONUL (1998) as library staff supporting information provision and use by:

- Collection / resource management and development, covering both printed and digital media, with particular reference to obsolescence of electronic systems, digital archiving and preservation (in collaboration with academic staff)
- Resource discovery, including identifying items at document and collection level, and tracking developments in scholarly communication and learning resources
- Metadata management, including developing local architectures for database access, with links to regional, national and supra-national resources
- Information handling skills, training staff, students and other learners to find, use and manage information, in partnership with academic specialists/learning consultants
- Rights negotiation, covering both contracts/licences with commercial suppliers, and inter-institutional agreements
- Learning support, creating and managing an environment for individual and group study, providing personal help to groups and individuals (face-to-face and electronically-mediated) and facilitating the development of learning and teamworking skills among students, including more formalised training and teaching.

There is emphasis on collaboration with academic staff with resource management, which I think that we can extend further in order to express the role of identifying and providing course resources in an information delivery framework that enables contextual resource-based learning for students. With increased emphasis on self-directed learning, the academic role as an intermediary is also more obvious. There will be increasing difficulties in determining where the role of the academic ends, and that of the librarian begins.

There is an increased emphasis on instructional role through formalised training and teaching. This empowers students as end users and consolidates their information literacy.

Areas that are not mentioned by SCONUL, but which I think will see increasing prominence, are:

- Project management (specifically to establish and see through the development with academics and media specialists of the resource frameworks for online teaching support)
- User behaviour identification (analysis of the environments in which discrete user groups seek and utilise information)
- Digital reference service, and the role that a librarian must adapt to in providing such service.

An alternative examination of these factors (Sloan, 1998) sees the continuing need for the intermediary in order to preclude the passive warehousing role of the digital library. Thereby a way is found between the model where librarians are irrelevant because everyone may access information directly, and the 'masters of the universe' model where some type of librarian (cybrarian?) acts as a gatekeeper to society's knowledge, by whom all must pass in order to:

- Obtain help in selecting information (knowing what to know)
- Obtaining information that is transitory and may not be indexed in conventional secondary services
- Obtain assistance in obtaining/understanding information that is highly contextual in nature rather than merely obtaining the information in a textual format
- Maintain the social functions, that exists in a physical library
- Fostering partnerships
- Providing outreach to students

Sloan sees librarians as gateways to the future and to the past; teachers; knowledge managers/workers; organizers of networked resources; advocates for information policy development; community partners; "sifters" of information resources; collaborators with technology resource providers; technicians; and individual information consultants.

Conclusion

You may take issue with some of the specific examples I have outlined, but I suspect that you are in general agreement with the thrust of this material, because I am preaching to the converted. Intermediaries know the value of intermediation but they must be able to demonstrate its value also to end users This message needs to be taken beyond our own cozy fraternity and repeated within the other disciplines.

We welcome input from other disciplines to our own conferences, so that we may hear about how usefully we are serving them. How often to we get ourselves inserted into their conferences - health, law, education, engineering - so that we can demonstrate worth, and instruct on the organisation and structure of, as well as access to, their information resources?

Our own literature tells us often enough that the Web is merely one of many sources and that we are regularly exhorted to involve ourselves in a continuing role in filtering, appraising resources and directing them in the correct context (Chen, 2000). I think most of us realise that. It is the end users who have to be convinced by marketing and performance.

This means that the intangible must be made tangible. Ehrlich & Cash have not been alone in noting that the expertise and experience of intermediaries is often invisible to the consumer, to the organisation in which these intermediaries work, and even to the intermediaries' managers. They see that the valuable services provided by intermediaries, are not made unnecessary by end-user access, and that they have a role in personalising and assuring the quality of information. Will librarians go the way of custom tailors? As with off-the-shelf clothing which is good enough and cheap enough for most, Nerdi & O'Day (2000) pose the question but think not - instead, they detail the role that librarians (like psychotherapists!) have in providing therapy, in this case information therapy - helping clients understand their own information problems. They give numerous examples of what we would call reference query and reference interviews that lead to assistance that technology doesn't provide (refreshing coming from non-librarians).

There is yet to be a generally acceptable substitute for personalised information service - for the knowledge and experience humans bring to a task, even if not in their own area of expertise. Librarians are skilled negotiators, searchers, collators of information, deliverers of useful knowledge, and often the glue that sticks communities of researchers together.

However, their presence is not always obvious, and may be applied to the extent that the information users perceive a self-service. This service is one that is only made possible by preparation such as filtering, selection and aggregation of resources for end users, and information organisation through mechanisms ranging from effective architecture (what we formerly knew in part as the role of those unsung hero(in)es, the cataloguers), to creation of documents with metadata and from the index up.

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